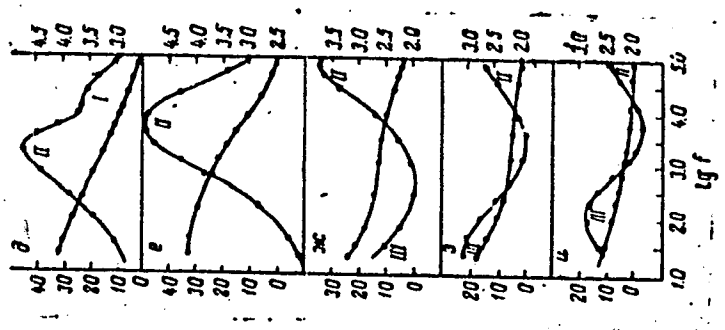
ACCESSION NR: AP4041715

ENCLOSURE: 03



Frequency dependence of tgδ and δC for luminor EL-460 at different temperatures:
T, °K: a - 80, b - 98, β - 108, z - 113, ∂-118, e - 123, ж - 253, з - 293, и - 328

( continuation of enclosure #2 )

Card 6/6

ACCESSION NR: AP4032877 S/0051/64/016/004/0708/0709

AUTHOR: Vergunas, F.I.; Kolotkov,V.V.; Yashin,E.M.; Smirnova, L.I.

TITLE: Some properties of film type electroluminescent capaitors

SOURCE: Optika i spektroskopiya, v.16, no.4, 1964, 708-709

TOPIC TAGS: electroluminescence, electroluminescent capacitor, zinc compound, electroluminophor

ABSTRACT: The authors prepared and tested film type electroluminescent capacitors. The films were obtained by vacuum sublimation of yellow EL-580 electroluminophor (a zinc sulfide phosphor - composition not specified). There were prepared low-voltage and high-voltage film capacitors; the latter differed from the former by the presence of a dielectric layer between the sublimated film and the electrode. The films were about 1 micron thick; the electrodes were made of $SnO_2$ and Al. The variation of brightness as a function of the applied voltage is shown in the figure (Enclosure 01). As regards both their voltage and frequency characteristics the low and high-voltage capacitors differed from each other and from power-filled conventional capacitors. The low-voltage capacitors rectified the current in the range of low voltages. Where frequency dependence of the brightness is concerned the low-vol-

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ACCESSION NR: AP4032877

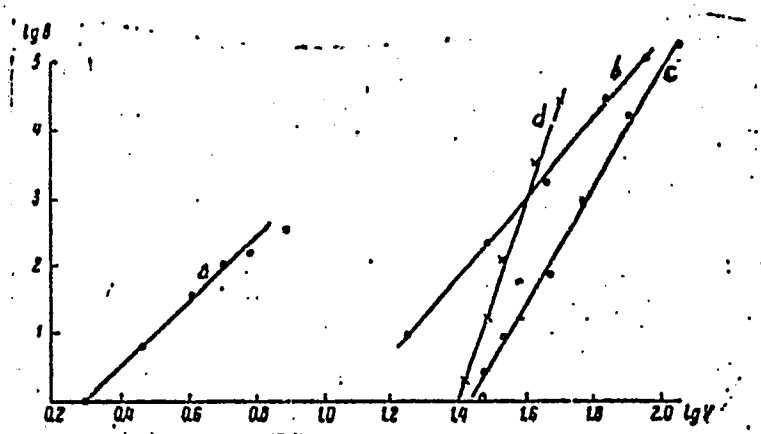
tage films are characterized by a horizontal curve (the brightness is frequency independent); the high-voltage capacitors by a rising straight line; the powder capacitors by a curve with a flat maximum. None of the film capacitors exhibited photoluminescence under stimulation by 354 and 310 mμ radiation. Investigation of the brightness waves showed that the films have only one principal peak in phase with the voltage. For films with a thick dielectric layer the peak was observed for both polarities; for the films with a thin dielectric layer the brightness peak is evinced only when the Al electrode is negative. Orig.art.has: 2 figures.

ASSOCIATION: none

SUBMITTED: 15Jul63 DATE ACQ: 07May64 ENCL: 01

SUB CODE: OP, EC NR REF SOV: 000 OTHER: 001

Card 2/3




Variation of brightness B with voltage V: a) low-voltage film, b) powder, c) high-voltage film with thick dielectric layer, d) film with thin dielectric layer.

Card 3/3

VERGUNAS, F.I.; YENIKEYEVa, K.Sh.

Dielectric and photodielectric properties of zinc sulfide powder electroluminophors. Fiz. tver. tela 6 no.7:2100-2106 Jl '64.
(MIRA 17:10)

1. Gor'kovskiy gosudarstvennyy universitet imeni N.I.Lobachevskogo.

L 26483-66 EWT(m)/T/EWP(t) IJP(c) JD

ACC NR: AP6013065 SOURCE CODE: UR/0048/66/030/004/0616/0617

AUTHOR: Vergunas, F. I.; Danilova, M. L.

ORG: None

TITLE: Aging of ZnS:Cu:Mn film electroluminescent capacitors /Report, Fourteenth Conference on Luminescence held in Riga, 16-23 September 1965/

SOURCE: AN SSSR. Izvestiya, Seriya fizicheskaya, v. 30, no. 4, 1966, 616-617

TOPIC TAGS: electroluminescence, zinc sulfide, aging, film capacitor

ABSTRACT: The aim of the work was to investigate the variation of the effective half-life of ZnS:Cu:Mn electroluminescent capacitors as a function of the operating regime and some other technological factors. Specifically, there were studied the fatigue (diminution of brightness) and irreversible (intrinsic) aging as described by Robert's formula. The electric and optic characteristics of the samples were measured in a vacuum of $10^{-5}$ mm Hg. The most potent aging factor was found to be moisture: 60% humidity reduced the half-life by a factor of 10 as compared with the half-life in vacuum. Tests of various direct sealants showed, however, that most of them liquidated the electroluminescence in that the sealants over the films reduced the breakdown voltage to below the value for the beginning of luminescence of unprotected films. An exception was the hermetic sealing compound designated KLT-30, which not only increased the life substantially, but actually enhanced the electroluminescence. The experimental

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data obtained at different frequencies of the exciting field are tabulated. The half-life decreased with increase of the field frequency: approximately equal deteriorations were observed for an equal number of voltage cycles. The half-life also decreased with increase of the initial brightness and with decrease of the film thickness (slowly in the thickness range from 1.5 to 0.5 microns and then rapidly in the range from 0.5 to 0.1 microns. The voltage required to obtain a given brightness does not depend on the film thickness in the 1.5 to 0.75 micron range, but mounts rapidly with further reduction of the thickness. The life also depends on the composition of the phosphor batch: reduction of the Cu content shortens the half-life. Aging of the films leads not only to diminution of the brightness but also to reduction of the dc conductivity and changes in other parameters; for example, with age the voltage dependence of the brightness becomes steeper, while the frequency dependence of the brightness becomes flatter. Orig. art. has: 1 table.

SUB CODE: 20/ SUBM DATE: 00/ ORIG REF: 000/ OTH REF: 000

L 26484-66 EWT(m)/EWP(k)/EWP(w)/EWP(t)/ETI IJP(c) JD

ACC NR: AP6013064 SOURCE CODE: UR/0048/66/030/004/0614/0615

43
41
B

AUTHOR: Vergunas, F. I.; Yenikeyeva, K. Sh.

ORG: None

18 27

TITLE: Comparison of the optic and dielectric properties of powdered ZnS electroluminophors /Report, Fourteenth Conference on Luminescence held in Riga, 16-23 September 1965/

SOURCE: AN SSSR. Izvestiya. Seriya fizicheskaya, v. 30, no. 4, 1966, 614-615

TOPIC TAGS: zinc sulfide, dielectric property, conductivity, optic property, luminophor

ABSTRACT: In investigating the changes in the dielectric properties of powdered zinc sulfide electroluminophors under the influence of high fields the authors discovered what they term the residual dielectric effect of electroluminescence: after cutoff of the electroluminescence-exciting voltage the frequency dependences of the weak-field dielectric properties exhibit a peak of tan $\delta$ and a corresponding dispersion of the capacitance C. Investigations have demonstrated that this effect is due to residual conductivity, which is "fed" by traps that become filled in the process of electroluminescence and are located in the vicinity of the active regions of the ZnS grains. Measurements of the effect showed that the residual conductivity at - 190° C differs little from that obtaining at room temperature. The residual conductivity versus

2

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L 26484-66
ACC NR: AP6013064

2

exciting voltage curve goes through a maximum; the variation of the residual conductivity parallels the variation of the light sum S stored in the phosphor during electrostimulation, which is to be expected in view of the inference that the residual conductivity is "fed" by the stored energy. The observed results are juxtaposed with the data of A.N.Georgobiani and M.V.Fok (no reference given) on the depth of the traps involved in formation of brightness waves; it is concluded that some of the same traps participate in both effects. Orig. art. has: 1 figure and 1 formula.

SUB CODE: 20/ SUBM DATE: 00/ ORIG REF: 000/ OTH REF: 000

Card 2/2

L 26402-66 EWT(1)/EWT(m)/EWP(t)/ETI IJP(c) JD
ACC NR: AP6013066 SOURCE CODE: UR/0048/66/030/004/0618/0619

AUTHOR: Vergunas, F.I.; Kolotkov, V.V.; Yashin, E.M.; Danilova, N.L.

ORG: None

TITLE: Concerning the mechanism of electroluminescence of ZnS:Cu:Mn film capacitors /Report, Fourteenth Conference on Luminescence held in Riga, 16-23 September 1965/

SOURCE: AN SSSR. Izvestiya. Seriya fizicheskaya, v. 30, no. 4, 1966, 618-619

TOPIC TAGS: electroluminescence, crystal phosphor, zinc sulfide, luminophor, film capacitor

ABSTRACT: The purpose of the work was to elucidate the nature of the electroluminescence mechanism in electroluminophor films. For the experiments there were prepared "conventional" film capacitors consisting of glass plates with successive layers of $SnO_2$, sublimated ZnS:Cu:Mn, dielectric (100 to 200 Å layer of SiO), and Al (electrode). Comparison with the results obtained in studying powders of the same phosphor indicated that the electroluminescence mechanism in the films is different from the mechanism in powders: whereas in powders excitation and emission occur during different half-periods, in films both processes obtain during the same half-period. As a result of analysis of the experimental data it is concluded that the following series of processes are involved in the electroluminescence of ZnS:Cu:Mn films: injection of electrons into the ZnS from the $SnO_2$ or extraction of electrons from the sublimate (depending on the volt-

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L 26482-66

ACC NR: AP6013066

age half-cycle), impact ionization of the lattice, build-up or storage of electrons in the vicinity of the anode, and, finally, recombination of the electrons with holes, accompanied by luminescence. A figure shows the voltage dependences of the brightness and the rectified current; the two curves in logarithmic coordinates are approximately parallel. Orig. art. has: 2 figures.

SUB CODE: 20/ SUBM DATE: 00/ ORIG REF: 000/ OTH REF: 000

Card 2/2

L 26485-66 EWT(m)/EWP(t)/ETI IJP(c) JD

ACC NR: AP6013063 SOURCE CODE: UR/0048/66/030/004/0612/0613

AUTHOR: Vergunas, F.I.; Yashin, E.M.; Kolotkov, V.V.; Danilova, N.L.

ORG: None

TITLE: Preparation of ZnS:Cu:Mn film electroluminescent capacitors and the influence of some parameters on their characteristics /Report, Fourteenth Conference on Luminescence held in Riga, 16-23 September 1965/

SOURCE: AN SSSR. Izvestiya. Seriya fizicheskaya, v. 30, no. 4, 1966, 612-613

TOPIC TAGS: electroluminescence, zinc sulfide, crystal phosphor, film capacitor

ABSTRACT: The film capacitors were prepared by vacuum sublimation of the ZnS:Cu:Mn phosphor onto glass plates precoated with $SnO_2$ (transparency 85%; resistance 5 to 50 ohm), annealing of the sublimate coated plates, and successive evaporation of a layer of SiO and an electrode layer of Al. All the operations, including the subsequent measurements of the optical and electric characteristics were carried out without breaking the vacuum. The variation of brightness B with the voltage V was characterized by a power function: $B \sim V^{\alpha}$. Plots of log E versus log E (E is the field strength) were mostly straight lines; except that the plots for thinner films showed a bend (decrease in slope) in the range of high current (high field) values. The frequency dependence of B is also characterized by a power function: $B \sim f^{\beta}$. As a result of heating of the

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L 26485-66

ACC NR: AP6013063

films the resistance of the $SnO_2$ layer decreased, the decrease being greater for greater ZnS layer thicknesses; the increase in resistance, i.e., the annealing, had little effect on the exponents $\alpha$ and $\beta$. In the absence of a dielectric ($SiO_2$) interlayer between the film and the Al, the films did not luminesce. The effect of film thickness is evinced mainly in shift of the log B versus log E plots along the log E axis with little or no change in slope, i.e., $\alpha$ is almost independent of the film thickness (except in the range of thin films and strong fields). With variation of the Cu and Mn contents in the batch the breakdown voltage and the brightness vary along a curve with a broad maximum, i.e., the log B versus log V plots shift along the log V axis. This made it possible to realize films of optimum brightness; those were also characterized by good reproducibility. Thin (0.13 $\mu$) films yielded up to 20 nit at 9.8 V and 1000 nit at 20 V; thick films (0.7 $\mu$) yielded 20 nit at 39 V and as much as 5100 nit at the pre-breakdown voltage of 84 V. Orig. art. has: 3 figures.

SUB CODE: 20/ SUBM DATE: 00/ ORIG REF: 000/ OTH REF: 000

Card 2/2 RB

L 36400-66 EWT(m)/EWP(t)/ETI IJP(c) JD

ACC NR: AP6018779 (A) SOURCE CODE: UR/0070/66/011/003/0471/0472

AUTHOR: Vergunas, F. I.; Mingazin, T. A.; Smirnova, Ye. M.; Abdiyev, S.

ORG: none

TITLE: Texture and electrical conductivity of cadmium sulfide sheets

SOURCE: Kristallografiya, v. 11, no. 3, 1966, 471-472

TOPIC TAGS: cadmium sulfide, electric conductivity, crystal orientation, [redacted] temperature dependence, photosensitivity

ABSTRACT: The effect of substrate temperatures on structure formation in photosensitive CdS films was studied and correlations between electrical conductivity and the degree of crystal orientation were obtained. Samples were obtained by vacuum sublimation ($2 \cdot 10^{-5}$ mm Hg) where the substrate temperature ($T_p$) varied from 75 to 400°C. Cu was added to increase the photosensitivity by treating the surfaces with a Cd-CuCl powder and annealing for one hour in Ar. Indium electrodes were evaporated into the surfaces to measure the electrical conductivity. The structure and grain orientation of the films were determined by x-rays and by a photomethod. All of the films had a grain size of about $10^{-5}$ cm and were composed of α-modified CdS. In the temperature interval of 150-400°C, the crystals had their $c$ axis oriented perpendicular to the plane of the substrate. The activation treatment (Cu addition) resulted in coarser crystals (2 to

UDC: 548.0 : 537.311

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L 36400-66

ACC NR: AP6018779

C

5 μ) and in a decrease in the orientation for all values of $T_p$ except for 250°C, where the orientation rose sharply. The electrical parameters measured the concentration of current carriers for both dark and light conductivity. In all cases, the greater the orientation the greater was the conductivity, indicating an anisotropic conductivity mechanism; the conductivity was much greater perpendicular to the $c$ axis than parallel to it. Along the $c$ axis the barrier potential for current carriers was high, but decreased with exposure to light. The barrier distance was estimated to be below $10^{-5}$ cm, indicating that the barriers were acting within grains. Orig. art. has: 1 figure.

SUB CODE: 11,09/ SUBM DATE: 05Apr65/ ORIG REF: 001/ OTH REF: 005

Card 2/2 MLP

L 26501-66 EWT(l)/EWT(m) IJP(c) GG/JG/JD

ACC NR: AP6013062 SOURCE CODE: UR/0048/66/030/004/0610/0611

AUTHOR: Vergunas, F. I.; Skobel'tsyna, N. A.

ORG: None

TITLE: The photodielectric effect in ZnS:Ag crystal phosphors /Report, Fourteenth Conference on Luminescence held in Riga, 16-23 September 1965/

SOURCE: AN SSSR. Izvestiya. Seriya fizicheskaya, v. 30, no. 4, 1966, 610-611

TOPIC TAGS: crystal phosphor, zinc sulfide, dielectric loss, photodielectric effect

ABSTRACT: The photodielectric effect (PDE), which consists in increase of the dielectric constant (i.e., the capacitance of the measuring capacitor) and change of the loss tangent of crystal phosphors under the action of ultraviolet irradiation, may be due either to trapped electrons (type I PDE) or conductance in an inhomogeneous specimen (type I PDE). In an earlier paper F.I.Vergunas and G.M.Malkin (Doklady AN SSSR, 137, 560, 1961) adduced the criteria or indications for distinguishing between PDE I and PDE II. In experimental studies of several ZnS phosphors the authors' group detected only PDE II (PDE I was evinced within the limits of the experimental error if at all); P.Krispin (Physica Status Sol. 3, 81, 1963), however, demonstrated the existence of PDE I in ZnS:Ag phosphor. Accordingly, the present work was concerned with investigation of the PDE in this crystal phosphor. The experimental procedure was the

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L 25501-66

ACC NR: AP6013062

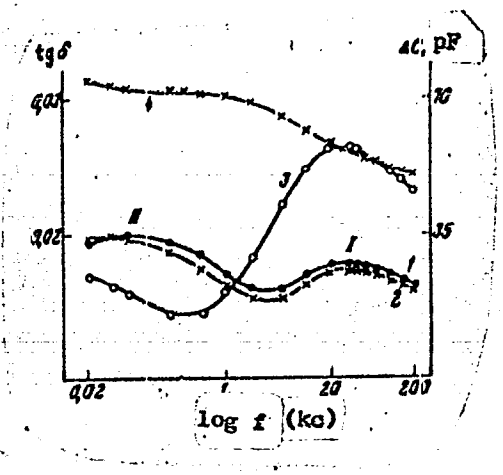


Fig. 1

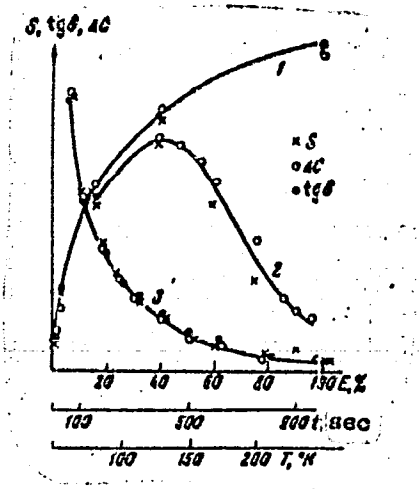


Fig. 2

Fig. 1. Frequency dependences of tan δ (curves 1-3) and Δ C (4) at different values of the UV intensity E and temperature T: 1) E = 100%, T = 313°K, 2) E = 39%, T = 313°K, 3) E = 39%, T = 203°K, 4) E = 100%, T = 80°K.

Fig. 2. Dependences of S, tan δ and Δ C on E (1), T (2), and the time of UV irradiation (3).

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L 26501-66

ACC NR: AP6013062

same as described earlier (F.I.Vergunas and K.Sh.Yenikeyeva, Izv. An SSSR, Ser. fiz., 26, 475, 1962). The phosphor was stimulated by the 365 mμ triplet. Measurements were made of the frequency dependences of the loss tangent and the increment in capacitance at different temperatures T and different levels of the exciting UV light E. There were also recorded the dependences of S (the light sum stored in the only significant 0.3 eV traps), the capacitance increment $\Delta C$, and tan $\delta$. The data are presented in the accompanying figures. It is inferred from analysis of the data, that the 0.3 eV traps, common to most zinc sulfide phosphors, differ in some manner in ZnS:Ag; at any rate the models usually employed for the 0.3 eV traps in other ZnS phosphors are inconsistent with the present results and hence presumably inapplicable to ZnS:Ag. Orig. art. has: 2 figures.

SUB CODE: 20/ SUBM DATE: 00/ ORIG REF: 004/ OTH REF: 004

Card 3/3

L 4879-66 EWT(m)/EWP(t)/EWP(b) IJP(c) JD

ACCESSION NR: AP5019835 UR/0181/65/007/008/2276/2278

AUTHORS: Vergunas, F. I.; Yenikeyeva, K. Sh. 44,55

TITLE: Residual dielectric effect of electroluminescence in ZnS electroluminors

SOURCE: Fizika tverdogo tela, v. 7, no. 8, 1965, 2276-2278

TOPIC TAGS: zinc compound optic material, electroluminescence, luminor, electron trapping, dielectric property, electric resistivity, temperature dependence/EL 460, EL 520, EL 580

ABSTRACT: The tests were made with electroluminors EL-460, -520, and -580. The tests have shown that after turning off the ac voltage that excited the electroluminescence of the sample, the luminor grains still retained a state corresponding to their excitation. This was manifest in the fact that in measurements in weak fields the frequency dependence of the loss angle showed a maximum, and the capacity of the sample showed a corresponding dispersion. The investigations have shown that this effect is due to the conductivity maintained by

Card 1/3

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the traps which are filled during the electroluminescence process, and not by localized electrons. That the effect is due to the traps was demonstrated by an experiment in which the traps were depleted by heating. The experiments have shown that the residual conductivity exists in a small region of the luminor grain, the one in which the electric field becomes concentrated during electroluminescence. The tests have also shown that the residual conductivity of the electroluminescence increases with increasing voltage, passing through a minimum, and also increases with frequency. The depth of the traps participating in the electroluminescence processes is larger than that in the case of photoluminescence. The results demonstrate that the residual dielectric effect of electroluminescence yields information on the processes accompanying the electroluminescence. Since this information is not averaged over the entire volume but pertains to local regions of the grain, the method is suitable for the investigation of inhomogeneous systems. The decrease in the residual resistivity at large voltages can be attributed to the release of electrons from the deep traps under the influence of the field during the time of excitation. One of the causes of the increase in the residual

L 4879-66

ACCESSION NR: AP5019835

resistance may be the redistribution of the voltage between the elements of the sample. The results are compared with those of others. Orig. art. has: 2 figures

ASSOCIATION: Gor'kovskiy gosudarstvennyy universitet im. N. I Lobachevskogo (Gor'kiy State University)

SUBMITTED: 190ct64 ENCL: 00 SUB CODE: SS, OP

NR REF SOV: 007 OTHER: 000

Card 3/3

VERGUNAS, F.I.; YASHIN, E.M.

Certain regularities of the optical flash in ZnS-Cu, Pb phosphors.
Opt.i spektr. 13 no.1:139-140 Jl '62. (MIRA 15:7)
(Phosphors)

VERGUNAS, F.Z.; MENIKEYEVA, K.Sh.

Photodielectric effect in electroluminescent zinc sulfide phosphors. Izv. AN SSSR. Ser. fiz. 26 no.4:475-479 Ap '62. (MIRA 15:4)

(Photoelectricity) (Zinc sulfide)

VERGUNOV, G.P.; PRYALUKHINA, A.F.

Miocene sediments of the Kurile Islands. Dokl. AN SSSR 164 no.6:1359-1362 O '65. (MIRA 18:10)

1. Vsesoyuznyy zaochnyy politekhnicheskiy institut. Submitted April 13, 1965.

VELIKOVSKAYA, E.M.; VEYMARN, A.B.; VERGUNOV, G.P.; APRODOV, V.A.; LYUSTIKH, Ye.N.; LIPOVETSKIY, I.A.; ROMASHOV, A.N.; FEL'DMAN, V.I.; SAVOCHKINA, Ye.N.; GEND'ER, V.Ye.; ROMENSON, B.M.; DOBROKHOTOVA, Ye.S.; LYUBIMOVA, L.V.; KHMARA, A.Ya.; VESELOVSKAYA, M.M.; KUDRIN, L.N.; CHERNIKOV, O.A.; SOROKIN, V.S.; IL'IN, A.N.; FLOROVSKAYA, V.N.; ZEZIN, R.B.; TEPLITSKAYA, T.A.; BRUSILOVSKIY, S.A.; KISSIN, I.G.; CHIZHOVA, N.I.; PAVLOVA, O.P.; SHUTOV, Yu.I.

Supplements. Biul. MOIP. Otd. geol. 39 no.4:155 Jl-Ag '64. (MIRA 17:10)

39694

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S/051/62/013/001/016/019
E039/E420

AUTHORS: Vergunas, F.I., Yashin, E.M.

TITLE: On certain regularities of the optical flash in ZnS-Cu, Pb phosphors

PERIODICAL: Optika i spektroskopiya, v.13, no.1, 1962, 139-140

TEXT: It is shown that the optical flash which can be stimulated in ZnS-Cu, Pb (Pb = 4 x $10^{-3}$ g/g eq. Cu = $10^{-6}$ g/g eq.) has three bands with maxima at 1.1, 1.32 and 1.54 μ, the relative intensities of which depend on the temperature. At -125°C there is effectively one wide band with a peak at 1.32 μ; at -92°C there are three bands of equal intensity with maxima at the above values; at +13°C the short wave peak 1.1 μ is small, the peak at 1.32 has disappeared and the peak at 1.54 μ is much larger. On increasing the temperature further to +40°C, only the long wave peak at 1.54 μ remains. The increase in intensity of the bands with increasing temperature is evidence of thermal activation and it is suggested that quenching of the bands at different temperatures can indicate the level of localization responsible for the different

Card 1/2

bands. In order to verify this the thermoluminescence curves for the phosphor were investigated. The phosphor was excited at -135°C, flashes stimulated at different times during heating and the intensity of the bands measured. The thermoluminescence curve has four peaks. Depths of the levels responsible for the peaks at about -90, -60 and +70°C were determined ($E_1 < 0.16$ ev, $E_2 = 0.17$ ev and $E_4 = 0.3$ ev) and related to the above results. Peak 3 at about +30°C was not analysed. Further confirmation of these levels was obtained by repeating this thermoluminescence curve after preheating to 0°C. In this case the first two peaks were not observed and the 1.3 and 1.1 μ bands were missing. The maximum energy of the 1.5, 1.3 and 1.1 μ bands were shown to be 0.82, 0.95 and 1.12 ev respectively, the depth of the localization levels 0.3, < 0.16 and 0.17 ev, and the temperatures for maximum intensity 20, < -140 and -80°C. There is no single valued dependence between these parameters. There are 2 figures and 1 table.

[Abstracter's note: Abridged translation.]

Card 2/2

VERGUNOV, B.D., inzh.

Defects in water-heating pipes of KV-5 steam boilers. Rech. transp. 18 no.1:28-30 Ja '59. (MIRA 12:2)
(Pipes) (Boilers, Marine)

VERGUNOV, B. D.

Opyt eksplatatsii dvigatelei ZD6 na sudakh v basseinalh vostoka [Experience in utilizing ship engines ZD6 in basins of the East]. Novosibirsk, Knizhnoe izdatel'stvo, 1953. 74 p.

SO: Monthly List of Russian Accessions, Vol. 6 No. 9 December 1953.

VERGUNOV, G.P.

Intrusive rocks of the southern Kurile Islands (Shikotan, Kunashir, and Urup). Geol.i geofiz. no.5:77-80 '61. (MIRA 14:6)

1. Sakhalinskiy kompleksnyy nauchno-issledovatel'skiy institut, Novo-Aleksandrovsk.
(Kurile Islands—Rocks, Igneous)

VERGUNOV, G.P.; PRYALUKHINA, A.F.

Pliocene sediments in the Kurile Islands. Dokl. AN SSSR 152 no.6:1420-1423 O '63. (MIRA 16:11)

1. Sakhalinskiy kompleksnyy nauchno-issledovatel'skiy institut Sibirskogo otdeleniya AN SSSR. Predstavleno akademikom D.I. Shcherbakovym.

VERGUNOV, G.P.

Structural relt of Kunashir Island (Kurile Islands). Izv. Sib. otd. AN SSSR Geol. i geofiz. no. 1:96-98 '58. (MIRA 14:5)

1. Sakhalinskiy kompleksnyy nauchno-issledovatel'skiy institut.
(Kunashir Island--Geology, Structural)

VERGUNOV, G.P.

Metallogeny of Kurile Islands and Sakhalin. Geol.i geofiz. 4:13-20 '62. (MIRA 15:8)

1. Sakhalinskiy kompleksnyy nauchno-issledovatel'skiy institut Sibirskogo otdeleniya AN SSSR, g. Novo-Aleksandrovsk.
(Kurile Islands—Ore deposits) (Sakhalin—Ore deposits)

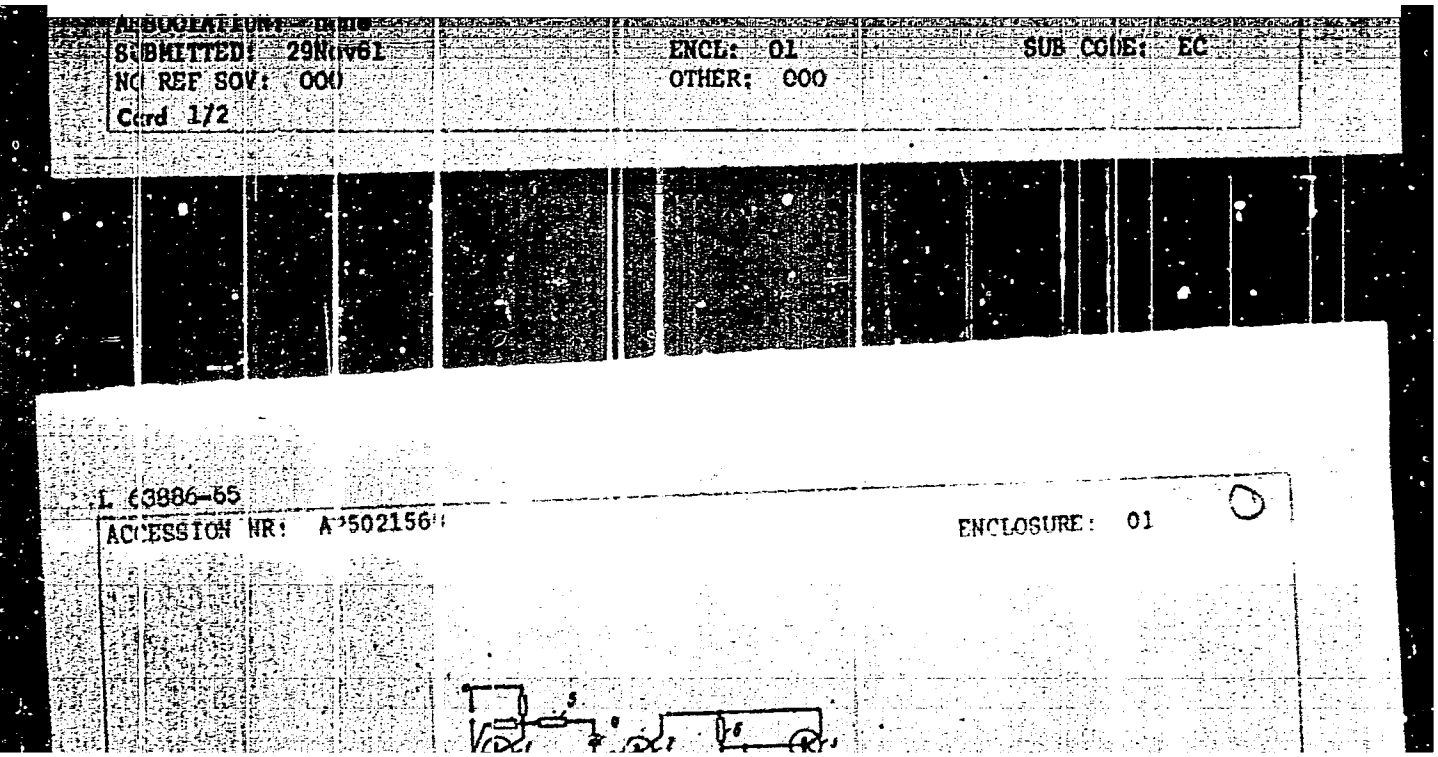
VERGUNOV, G.P.

Outline of the geology and metallogeny of the southern part of the Kurile Archipelago. Trudy Sakh.kompl.nauch.-issl. inst. AN SSSR no.10: 65-75 '61. (MIRA 15:6)
(Kurile Archipelago—Geology, Economic)

VERGUNOV, G.P.

New data on the ultrabasite rocks of Sakhalin and the Kurile Islands. Dokl. AN SSSR 158 no.3:629-632 S '64. (MIRA 17:10)

1. Vsesoyuznyy zaochnyy politekhnicheskiy institut. Predstavleno akademikom D.S.Korzhinskim.



ASSOCIATION:
SUBMITTED: 29Nov61 ENCL: 01 SUB CODE: EC
NO REF SOV: 000 OTHER: 000
Card 1/2

L 63886-65
ACCESSION NR: AP5021561 ENCLOSURE: 01

CHUGUNOV, L.F., inzh.; LISOVSKIY, I.I., inzh.; YARMIZIN, V.A., inzh.; KUMEKHOV, B.S., inzh.; VERGUS, N.G., inzh.; KRIVENKOV, N.A., kand. tekhn. nauk

Technical progress at the "Molibden" Mine. Gor. zhur. no.9:6-10 S '65. (MIRA 18:9)

1. Tyrnyauzskiy vol'framo-molibdenovyy kombinat (for Chugunov, Lisovskiy, Yarmizin, Kumekhov, Vergus). 2. Institut gornogo dela im. A.A.Skochinskogo (for Krivenkov).

BUD'KO, A.V.; KRIVENKOV, N.A.; ARUTYUNOV, K.G.; IOFIN, S.I.; DRONOV, N.V.; FOKIN, Yu.N.; CHUGUNOV, L.F.; VERGUS, N.G.; KUTUZOV, D.S.; TEN, N.A.; FILIPPOV, N.I.; SHNAYDER, M.F.

Experiences in using the caving system with end drawing of ore. Gor. zhur. no.8:22-26 Ag '65. (MIRA 18:10)

1. Institut gornogo dela im. A.A. Skochinskogo (for Bud'ko, Krivenkov, Arutyunov). 2. Vsesoyuznyy nauchno-issledovatel'skiy gornometallurgicheskiy institut tsvetnykh metallov (for Iofin, Dronov, Fokin). 3. Tyrnyauzskiy kombinat (for Chugunov, Vergus). 4. Leninogorskiy polimetallicheskiy kombinat (for Kutuzov, Ten, Filippov, Shnayder).

DOROSHENKO, P.S.; VERGUZOV, P.S.

Two year's experience in the turpentining of larch in Western Siberia. Gidroliz. i lesokhim.prom. 15 no.1:26-27 '62. (MIRA 18:3)

1. Kombinat "Bratskles" (for Doroshenko). 2. Sredne-Iyskoye lesokhimicheskoye khozyaystvo (for Verguzov).

VERGUZOV, P.S.

Transfer the cleaning of oleoresins to the factory. Gidrolis. i lesokhim. prom. 11 no.1:26 '58. (MIRA 11:2)

1.Alzamayskiy khimleskhoz.
(Oleoresins)

VERGUZOV, P.S.

Experiment in tapping larch. Gidroliz. i lesokhim.prom. 14 no.3: 24 '61. (MIRA 14:4)

1. Srednе-Iyskiy khimleskhoz.
(Larch) (Turpentining)

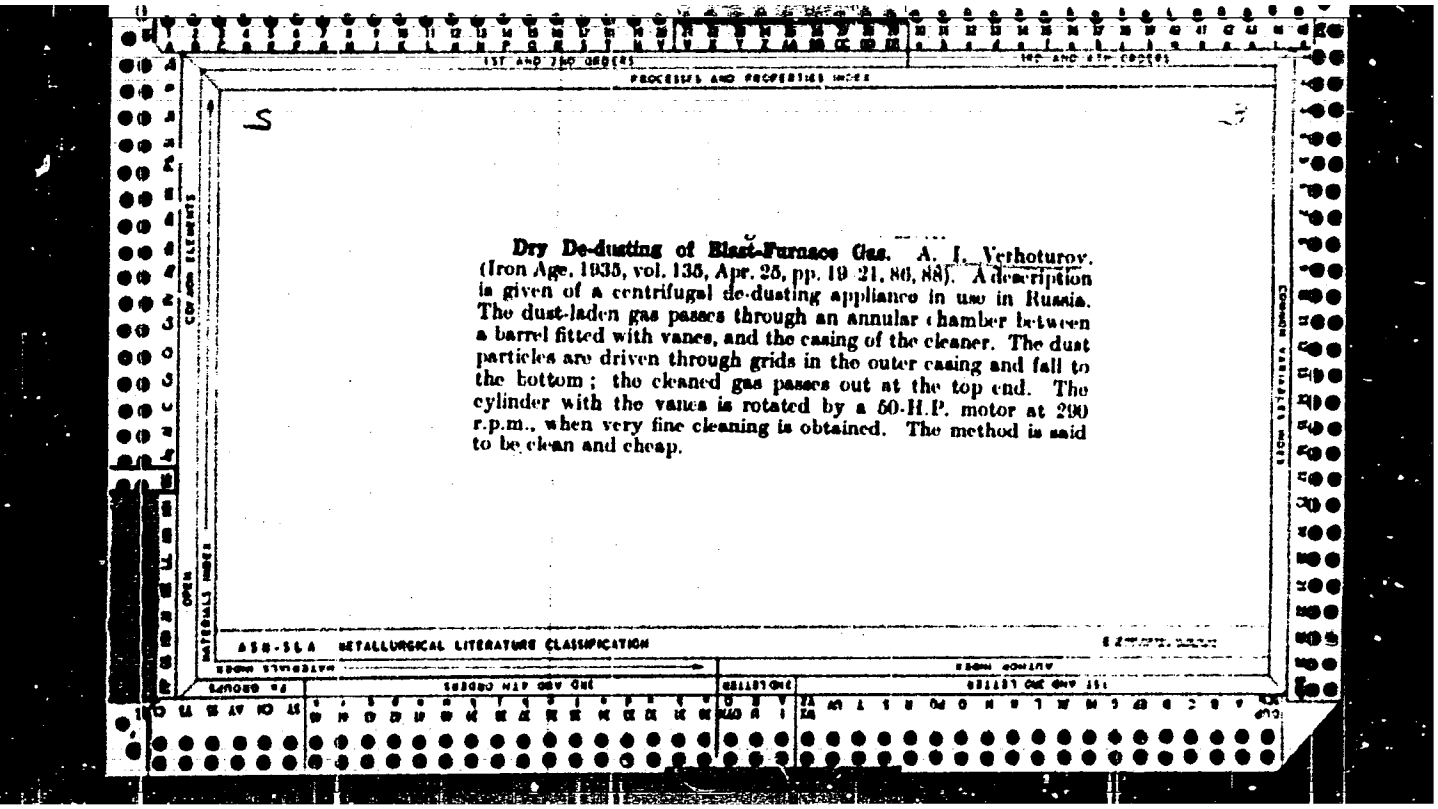
VERGUZOV, P.S.

Experimental transportation of oleoresin in bags. Gidroliz. i lesokhim. prom. 11 no.3:22 '58. (MIRA 11:5)

1. Alzamayskiy khimleskhoz.
(Oleoresins--Transportation) (Bagging)

VERHAS, Jozsef

Possibilities of using synthetic products in the mass production industry. Gep 12 no.2:60-64 F '60.



**Dry De-dusting of Blast-Furnace Gas.** A. I. Verhoturov. (Iron Age, 1935, vol. 135, Apr. 25, pp. 19–21, 86, 88). A description is given of a centrifugal de-dusting appliance in use in Russia. The dust-laden gas passes through an annular chamber between a barrel fitted with vanes, and the casing of the cleaner. The dust particles are driven through grids in the outer casing and fall to the bottom; the cleaned gas passes out at the top end. The cylinder with the vanes is rotated by a 50-H.P. motor at 290 r.p.m., when very fine cleaning is obtained. The method is said to be clean and cheap.

(1)

YUGOSLAVIA

FUGAS, Mirka; GRITILIZZA, Mirjana; VALIC, F. and VERHOVNIK, S.; Institute for Medical Research and Occupational Medicine (Institut za medicinska istrazivanja i medicinu rada,) Zagreb.

"Air Pollution Studies and Atmospheric Sediment Analysis in the City of Zagreb."

Zagreb, Arhiv za Higijenu Rada i Toksikologiju, Vol 16, No 3, 1965; pp 215-226.

Abstract [English summary modified]: Review of one year's data on air pollution monitoring in Zagreb reveals that the city is one of the most heavily polluted industrial cities in Europe at this time. Presentation of data on types of atmospheric impurities, correlations with meteorological conditions and seasons of year. Plan, photograph, 3 tables, 5 graphs; 1 Yugoslav and 7 Western ref's; ms rec 30 Jan 65.

*1 Apr 1962 - 31 Mar 1963

1/1

YUGOSLAVIA

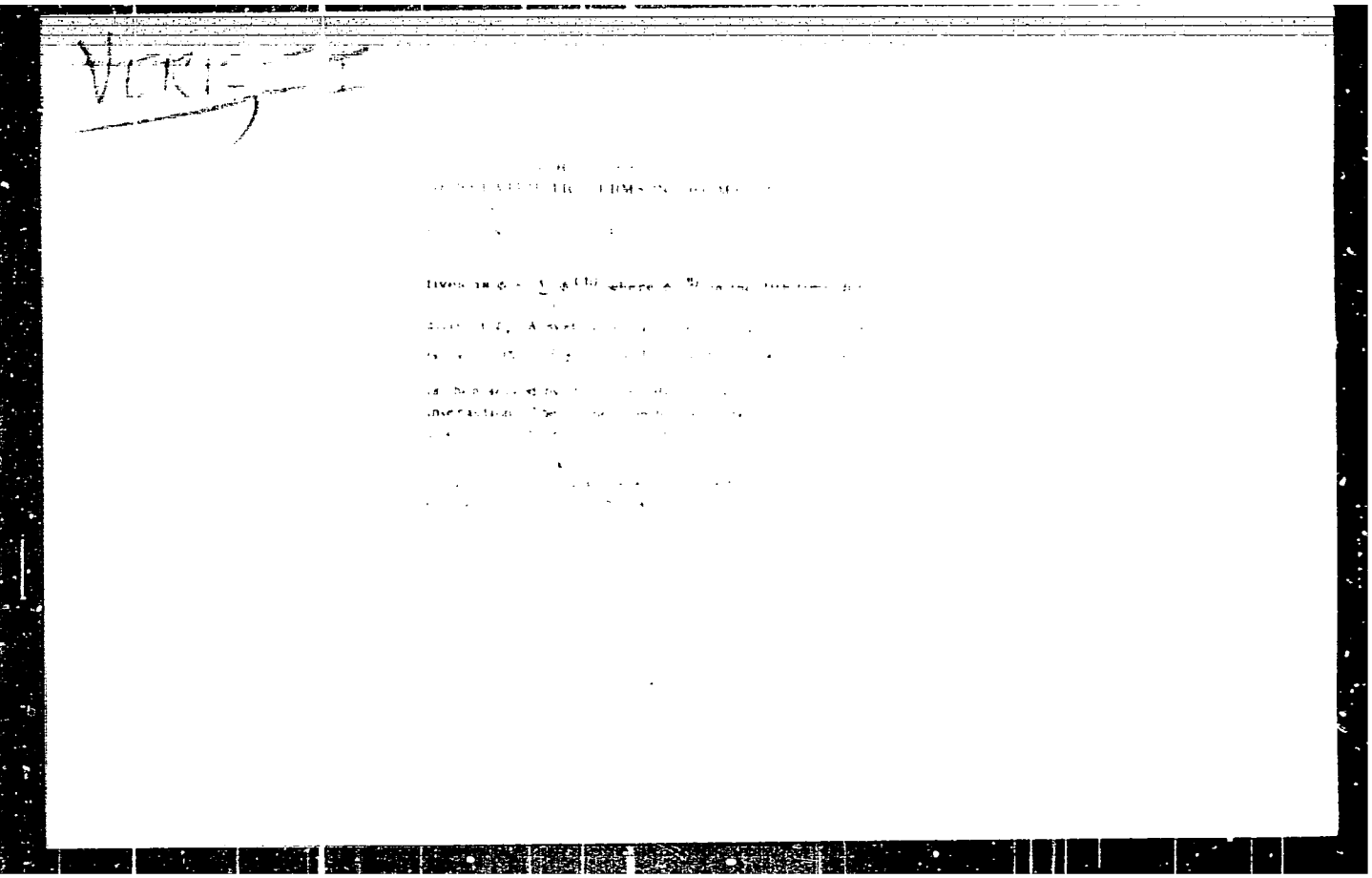
FUGAS, Mirka; GEITILIZZA, Mirjana; VALIC, F. and VERHOVNIK, S.; Institute for Medical Research and Occupational Medicine (Institut za medicinska istrazivanja i medicinu rada,) Zagreb.

"Air Pollution Studies in the City of Zagreb. Part Two. Determination of Concentrations of Sulfur Dioxide and Smoke."

Zagreb, Arhiv za Higijenu Rada i Toksikologiju, Vol 16, No 3, 1965; pp 227-249.

Abstract [English summary modified]: Data on $SO_2$ and smoke concentrations in Zagreb as measured daily for 12 months at 4 locations. Domestic heating furnaces were most culpable and caused extremely heavy pollution especially during winter time, suggesting the great potential value of centralized furnaces by block rather than old individual building system. Map, tables, 10 graphs; 1 Yugoslav and 11 Western references; ms rec 30 Jan 65.

1/1



VERICH, B.I., inzh.

New designs for hatch covers. Sudostroenie 24 no.7:79-81 Jl '58. (MIRA 11:9)
(Germany, Western--Ships--Equipment and supplies)

COUNTRY : USSR
CATEGORY : Forestry. FOREST CULTURES.

ABS. JOUR. : Ref Zhur-Biologiya, No.1, 1959, No. 1486

AUTHOR : Verich, F.P.; Oberto, V.I.
INST. : Voroshilovgrad Leskhoz
TITLE : Growing of White Willow and Black Poplar Seedlings in the Donbas Conditions.

ORIG. PUB. : Lesn. Kh-vo, 1958, No.1, 75-76

ABSTRACT : An experiment at the Voroshilovgrad Leskhoz in growing seedlings of white willow and black poplar from seeds is described. Fertile shoots were stuck into beds at the nursery. The seeds began almost at once to come out and in two days ( with intensified watering) fine sprouts appeared. The number of shoots recommended is not more than 30 specimens per 1 sq.m.

CARD: 1/1

VERICH, S.

VERICH, S.

Group with initiative. Fin.SSSR 16 no.4:49-52 Ap '55. (MIRA 8:3)
(Finance)

Vlasova, T. A.

Dynamics of the Reserves of Soil Moisture on the Territory of the USSR. Trudy Po v.-kh. meteor. (Works on Agricultural Meteorology) No XXVI, 1948 (U-36)

SO: U-3039, 11 Mar 1953

VERIGIN, B.V.; SYSOYEVA, T.K.

Parasites - Fishes

Some data on the biology of Livoneca anurensis Gerstfeldt (Crustacea, Isopoda), Zool. Zhur., 31, No. 4, 1952

9. Monthly List of Russian Accessions, Library of Congress, October 1952 ~~1953~~. Unclassified.

VERIGIN, B.V.; SYSOYEVA, T.K.

Crayfish

Some data on the biology of Livonecа amurensis Gerstfeldt (Crustacea, Isopoda). Zool. zhur. 31, no. 4, 1952

9. Monthly List of Russian Accessions, Library of Congress, October 1952. Unclassified.

1. VERIGIN, B. V.

2. USSR (600)

4. Siberia-Carp

7. Transportation of the young of Siberian carp (Ctenopharyngdon idella and Hypophthalmichthys molitrix). Ryb. khoz. 28, No. 9, 1952.

9. Monthly List of Russian Accessions, Library of Congress, January 1953. Unclassified.

VERIGIN, B. V., SYSOYEVA, T. K.

Crayfish

Some data on the biology of Livoneca amurensis Gerstfeldt (Crustacea Isopoda).
Zool. Zhur. 31, no. 4, 1952.

9. Monthly List of Russian Accessions, Library of Congress, October 1952 XXXXX 1953, Uncl.

VERIGIN, B. V.

"The Biology of Hypophthalmichthys Molitrix (Val.) (in Relation to the Problems of Increasing Its Numbers in the Amur and Acclimating It in Waters of the European Part of the USSR)." Cand Biol Sci, Moscow State U, Moscow, 1953. (RZhBiol, No 1, Se 54)

SO: Sum 432, 29 Mar 55

STROGANOV, N.S.; VERIGIN, B.V.

Contributions to the study of acclimatization of Amur fish in the European part of the U.S.S.R. Zool.zhur.33 no.1:127-135 Ja-F '54. (MLRA 7:2)

1. Biologo-pochvennyy institut i Agrobiologicheskaya stantsiya Moskovskogo gosudarstvennogo universiteta.
(Fishes) (Acclimatization)

VERIGIN, B.V.

Structure of the branchial apparatus and the suprabranchial organ of Hypophthalmichthys molitrix (Val.) [with summary in English]. Zool. zhur. 36 no.4:595-602 Ap '57. (MIRA 10:6)

1. Agrobiologicheskaya stantsiya Moskovskogo gosudarstvennogo universiteta imeni M.V. Lomonosova.
(Amur River--Carp) (Gills)

NIKOL'SKIY, G.V.; VERIGIN, B.V.; KLYUCHAREVA, O.A.

Fishery management in the middle and upper Amur Basin in connection with the planned hydraulic construction work. Zool.zhur. 39 no.3: 407-416 '60. (MIRA 13:6)

1. Chair of Ichthyology, and Agrobiological Station of the Moscow State University.
(Amur River--Fisheries--Research)

MELIKHOV , G.V.[translator]; VERIGIN, B.V., kand. biolog. nauk, red.;
PODLAZOV, K.M., red.; GOR'KOVA, Z.D., tekhn. red.;
PROKOF'YEVA, L.N., tekhn. red.

[Pond fish culture] Prudovoe rybovodstvo. Moskva, Izd-vo sel'-
khoz. lit-ry, zhurnalov i plakatov, 1961. 271 p. Translated
from the Chinese. (MIRA 15:2)

(China--Fish culture)

VERIGIN, B.V.

Results of the acclimatization of Far Eastern plant-eating fishes and future measures for rearing and studying them in new regions. Vop. ikht. 1 no.4:640-649 '61. (MIRA 14:12)

1. Agrobiostantsiya Moskovskogo gosudarstvennogo universiteta.
(Amur River—Carp)
(Animal introduction)

TASHLIYEV , A.O., kand. biol. nauk, otv. red.; ALIYEV, D.S., kand. biol. nauk, red.; VERIGIN, B.V., kand. biol. nauk, red.; KUZ'MENKO, A.I., red.izd-va; NASIBOVA, S.G., red.izd-va; IVONT'YEVA,G.A., tekhn.red.

[Papers of the All-Union Conference on the Commercial Introduction of the Plantivorous Fishes Ctenopharyngodon Idella and Hypophthalmichthys Molitrix in the Bodies of Water of the U.S.S.R.] Materialy Vsesoiuznogo soveshchaniia po rybokhoziaistvennomu osvoeniiu rastitel'noiadnykh ryb - belogo amura (Ctenopharyngodon idella) i tolstolobika (Hypophthalmichthys molitrix) - v vodoemakh SSSR. Ashkhabad, Izd-vo AN Turkm.SSR, 1963. 224 p. (MIRA 16:10)

1. Vsesoyuznoye soveshchaniye po rybokhozyaystvennomu osvoyeniyu rastitel'noyadnykh ryb v vodoyemakh SSSR. Ashkhabad, 1961.
(Ctenopharyngodon) (Hypophthalmychthys)
(Fish introduction)

124-57-1-1345

Translation from: Referativnyy zhurnal, Mekhanika, 1957, Nr 1, p 185 (USSR)

AUTHOR: Verigin, K. P.

TITLE: The Strength of Concrete Elements Under Two-dimensional Compression (Prochnost' betonnykh elementov pri dvukhmernom szhatii)

PERIODICAL: Tr. Khar'kovsk. inzh.-stroit. in-ta, 1955, Nr 4, pp 113-119

ABSTRACT: An experimental determination of the strength of concrete cubes 12x12x12 cm under two-dimensional compression. The tests show a substantial increase up to 140% in the strength of the concrete in comparison to one-dimensional compression. The degree of the increase in strength of the concrete depends on the testing conditions, the ratio of the stresses in the two directions, and the strength of the concrete itself.

Z. A. Atsagortsyan

1. Concrete--Mechanical properties--Compression effects
2. Concrete--Mechanical properties--Test results

Card 1/1

VERIGIN, K.P., kandidat tekhnicheskikh nauk.

Resistance of concrete to deformation under simultaneous action of axial tension and compression. Bet. i zhel.-bet. no.2:64-66 F '56. (Concrete--Testing) (MLRA 9:6)

VERIGIN, K.P., kandidat tekhnicheskikh nauk.

Diagrams for selecting profiles for excentrically compressed elements with I-cross-sections. Bet. i zhel.-bet. no.3:110-112 Mr '57. (MLRA 10:4)

(Columns, Concrete)

VERIGIN, K.P., kand.tekhn.nauk

Resistance of concrete under combined action of axial and transverse forces. Bet. i zhel.-bet. no.10:479-480 O '60. (MIRA 13:10)

(Strains and stresses)

VERIGIN, M.I. [Veryhin, M.I.]

Ultrabasites in the left bank of the Dnieper and their place in the formation of the Pre-Cambrian. Geol. zhur. 24 no.1:28-34 '64. (MIRA 18:7)

1. Pravoberezhnaya geologorazvedochnaya ekspeditsiya tresta "Dneprogeologiya".

TSEDRIK, Mikhail Semenovich, kand. fiz.-mat. nauk, dots.; BIRICH, Yevgeniya Vasil'yevna; MAKEYEVA, Galina Pavlovna; SAVITSKAYA, Inessa Fedorovna; VEREVKINA, N.M., red.; MOLCHANOVA, A.K., red.

[Graphs in physics] Fizika v grafikakh. [By] M.S.TSedrik i dr. Minsk, Vysshaia shkola, 1964. 258 p. (MIRA 17:6)

ASTAUROV, B.L.; VEREYSKAYA, V.N.

Bisexual reproduction in three successive generations of tetraploid hybrids of the domestic (Bomby. mori L.) and wild (B. mandarina Moore) silkworms. Biol. MOIP. Otd. biol. 68 no.6:111-121 N-D '63. (MIRA 17:1)

VERIGIN, N.

"Filtration at the foundation of dams in connection with complex subterranean contours."

Dissertation for Candidate of Technical Sciences, Moscow Construction Engineering Institute im. Kuybyshev (MISI)

Subject: Hydroengineering building and construction

Gidrotekhnicheskoye, stroitel'stvo, 12, 1946.

VERIGIN, N. N.

33115

Raschet Drenazha V Zone Podtopleniya Vodokhranilishch I Podpetykh B'Yefov. Gidrotekhnika I Melioratsiya, 1949, No 4, c. 67-73

SO: Letopis' Zhurnal'nykh Statey, Vol. 45, Moskva, 1949

Applied Mechanics Review

Soil Mechanics, Seepage

3083. N. N. Verigin, On the question of the calculation of underground water collectors in conditions of a plane movement of soil waters (in Russian), Doklady Akad. Nauk SSSR 64, 183-186 (Jan. 1949).

Paper presents solution of an involved problem of seepage in vicinity of a gallery, from which water is being pumped out. Gallery is located below top surface of basic water-bearing stratum of great thickness, overlaid by a semipervious stratum, which itself is covered by upper water-bearing layer, with water head in it different from basic layer. On assumption of somewhat questionable boundary conditions, problem is solved by conformal transformation. Solution is left in a complex form. No numerical examples are given. Alexander Hrennikoff, Canada

1700

Applied Mechanics Review

Soil Mechanics, Seepage

1681. N. N. Verigin, Seepage of water from an irrigation canal (in Russian), Doklady Akad. Nauk SSSR 66, 589-592 (June 1949).

The paper presents a solution, by means of conformal mapping, of the two-dimensional problem of seepage from an irrigation canal into previous soil of constant permeability, when the water level in the canal coincides with the horizontal ground surface. Seepage in the capillary zone is included. The shape of the cross section of the canal is determined from the resultant equation, and it resembles a semicircle.

The most significant quantities found are the total seepage discharge and the width between the extreme flow lines both at the surface and at a great depth in the ground, where the flow becomes vertical and the velocity becomes equal to the coefficient of permeability.

A numerical example shows that in the usual conditions, when the width of the canal is 0.20 to 0.30 meters, and the capillary head 1 to 2 meters, the capillary forces increase the discharge some 9 to 12 times compared to the condition when they are absent.

Alexander Hrennikoff, Canada

1750

VERIGIN N. N.

PA 151T95

USSR/Physics - Ground Waters 21 Jun 49

"Nonstationary Motion of Ground Waters Near Reservoirs," N. N. Verigin, 4 pp

"Dok Ak Nauk SSSR" Vol LXVI, No 6

Nonlinear differential equation describing motion of free ground waters along a horizontal impermeable layer is usually reduced to a Fourier equation (or made linear) by making certain assumptions regarding depth of flow. Verigin maintains this type of linearization leads to considerable errors unless initial and terminal conditions are considered. In his method, a new variable $wh^2/2$ is introduced in the

USSR/Physics - Ground Waters (Contd) 21 Jun 49

nonlinear equation before it is reduced to a linear equation. Submitted by Acad A. I. Nekrasov 15 Apr 49.

151T95

VERIGIN, N. N.

USSR/Physics - Ground Water 11 Feb 50

"Ground-Water Flow in the Case of Local Intensified Infiltration," N. N. Verigin

"Dok Ak Nauk SSSR" Vol LXX, No 5, pp 777-779

Using equations of thermodynamics, discusses steady-state and nonstationary flows of ground waters under conditions of local intensified infiltration on part of flow caused by artificial irrigation of lands and other "meliorative" (soil conservation) measures. Submitted 2 Dec 49 by Acad A. I. Nekrasov.

165T59

VERIGIN, N. N.

USSR/Physics - Filtration 1 Aug 51

"Filtration From a Channel Into Dry Ground," N. N. Verigin, Vodgeo (All-Union Sci Res Inst of Water Supply, Sewerage, Hydraulic Eng Structures, and Eng Hydrogeol)

"Dok Ak Nauk SSSR" Vol LXXIX, No 4, pp 581-584

Sets up and solves the partial differential eq describing the filtration from a canal into the nearby ground. Submitted by Acad A. I. Nekrasov 1 Jun 51.

211T93

VERIGIN, N. N.

USSR/Geophysics - Artificial Freezing 11 Dec 51
of Grounds

"Thermodynamic Calculations of Artificial Freezing of Grounds," N. N. Verigin

"Dok Ak Nauk SSSR" Vol LXXXI, No 5, pp 803-806

Solves the axisym problem for arbitrary initial and boundary conditions for the case where the cold source is constantly acting and linear and is located on the axis of symmetry of the column r=0, in connection with the phenomenon of heat exchange during artificial freezing of grounds during construction operations. Submitted by Acad A. N. Kolmogorov 11 Oct 51.

210T45

VERIGIN, N.N.

The Committee on Stalin Prizes (of the Council of Ministers USSR) in the fields of science and inventions announces that the following scientific works, popular scientific books, and textbooks have been submitted for competition for Stalin Prizes for the years 1952 and 1953. (Sovetskaya Kultura, Moscow, No. 22-40, 20 Feb - 3 Apr 1954)

| Name | Title of Work | Nominated by |
|---|---|---|
| Verigin, N.N. | Certain problems of hydrodynamics which are significant in agricultural soil improvement and hydraulic engineering (series of articles) | All-Union Scientific Research Institute of Water Supply, Sewerage, Hydraulic Engineering Structures, and Engineering Hydrology |

SO: W-30604, 7 July 1954

VERIGIN, N.N.

USSR/Engineering - Hydraulics, Ground Water Apr 52

"Movement of Ground Water Near Reservoirs," N. N. Verigin, Dr Tech Sci

"Gidrotekh Stroi" No 4, pp 35-39

Discusses 2 factors to be considered in designing water reservoirs: ground backwater for various time periods after completing reservoir, and length of water filtration period and extent of filtration losses for shore satn. Discusses procedure of caln and analyzes results.

219T28

USSR/Engineering - Hydraulics, Structures May 52

"Forcing Cementing Solutions Into Rocks for Increasing the Strength and Imperviousness of Footings for Hydraulic Structures," N. N. Verigin

"Iz Ak Nauk SSSR, Otdel Tekh Nauk" No 5, pp 674-687

Investigates injection of liquids into porous medium taking into consideration elasticity forces develop in liquid to be displaced and in material of porous medium itself. Gives soln of problem for 2 cases: straight-line row of forcing holes and single hole. Eqs obtained may serve as certain theoretical basis for performing works on cementing and

219T35

VERIGIN, N.N.

silicification of rocks in hydraulic construction and mining. Submitted by Acad A. I. Nekrasov 28 Jul 51.

219T35

1. VERIGIN, N. N., Dr.

2. USSR 600

4. Reservoirs

7. Condition of ground water during the filling and use of water reservoirs, Gidr. stroi, 21, No. 11, 1952.

9. Monthly List of Russian Accessions, Library of Congress, April 1953, Uncl.

VERIGIN, N.N.

Among the papers presented by the First All-Union Conference on Aerohydrodynamics (6-13 Dec 1952) convened by the Institute of Mechanics, Academy of Sciences USSR, was:

"Linear Theory of the Movement of Ground Water and Its Application in Hydraulic Engineering" by Verigin, N. N.

SO: Izvestiya AN USSR, Otdeleniye Tekhnicheskikh Nauk, No.6, Moscow, June 1953, (W-30662, 12,July 1954)

VERIGIN, N.N.; NEKRASOV, A.I., akademik.

Certain problems in chemical hydrodynamics of special interest to the field of land reclamation and hydraulic engineering. Izv.AN SSSR Otd.tekh.nauk no. 10:1369-1382 O '53. (MLRA 6:11)

1. Akademiya nauk SSSR (for Nekrasov). (Soil percolation)

VERIGIN, n. n.,

Applied Mechanics Reviews Vol. 7 No. 4 Apr. 1954 Soil Mechanics Seepage

1323. Verigin, N. N., Movement of moisture in soil (in Russian), Doklady Akad. Nauk SSSR (N.S.) 89, 2, 229-232, Mar. 1953.

In soils penetrated by air the movement of moisture usually takes place when the pores are not completely filled, and is due either to cohesion or to gravity. Cohesive moisture is basically moved by absorptive forces causing its displacement from thicker to thinner layers. These forces are defined by gradient of moisture. The movement of moisture is also caused by thermo-capillary and thermo-osmotic forces, and by saline diffusion. Free or gravity moisture moves under forces of gravity and capillarity caused by surface stresses of water in narrow channels of pores and by evaporation.

The paper deals with movement of moisture of constant temperature and salinity, caused only by gravity, absorption, and capillarity. If both cohesive and free water move simultaneously in soil, free water can change into cohesive water. This will depend on molecular humidity of the soil. The problems are presented in differential equations and concluded in two basic characteristics of movement of the moisture in soil: (1) Transition of free into cohesive moisture causes considerable delay of the movement; (2) if the

(over)

cohesion of free moisture in soil decreases, the resistance against movement will sharply increase. Other results clarify laboratory and field tests. Reference is made to research by A. V. Likov, B. V. Deriagin, E. Koliasev, K. Melnikov, S. F. Averianov, L. S. Leibenson, N. N. Bindeman, A. A. Rode, A. I. Bidaronskiy, B. A. Kin, R. A. Fisher, W. B. Haines, and others.

Referring to papers by L. S. Leybenson, P. Ya. Polubarinova-Kochina, and S. A. Christianovich, author presents and discusses a new system of differential equations which can be used also for plano-radial and sphero-radial filtration. To the author's knowledge, the available literature refers only to linear law of filtration, and other types of fluid flow have not yet been theoretically studied.

J. J. Polivka, USA

VERIGIN, N. N.

Applied Mechanics Reviews, V.7 Nov. 1954 Soil Mechanics, Seepage

957. Verigin, N. N., Drenching of the soil during irrigation by sprinkling (in Russian), *Dokladi Akad. Nauk SSSR (N.S.)* 89, 4, 627-630, Apr. 1953.

VERIGIN N. N.

USSR/Geophysics - Oil Well Flooding 1 Aug 53

"Interaction of Wells During Flooding Outside the Boundaries of Oil Beds," N. N. Verigin

DAN SSSR, Vol 91, No 4, pp 753-756

Solves the problem involving injection wells and computation of change of pressure of the oil layer and the shift of boundary water. Presented by Acad M. A. Lavrent'yev 30 May 53.

272T38

USSR/ Engineering - Subsurface water

Card 1/1 Pub. 22 - 9/63

Author : Verigin, N.N.

Title : About the movement of subsurface water near dams

Periodical : Dok. AN SSSR 99/6, 917-920, Dec 21, 1954

Abstract : An analitical investigation is presented of the movement of subsurface water near a dam. The theory of heat conductivity is used for the investigation, because the basic equation of water movement has a form similar to that of heat conductivity equation, i.e.,

$$a \nabla^2 u = \frac{du}{dt}, \quad u = h^2$$

where h is a depth (pressure) in this case of the flow of water at a point with x, y coordinates at the t moment of time; and a is the coefficient of piezoconductivity. Seven USSR references (1947-1954). Graph; diagrams.

Institution: The All Union Scientific Research Institute VODGEO

Presented by: Academician A.I. Nekrasov, October 5, 1954

USSR/Engineering - Civil, Water flow FD-2923

Card 1/1 Pub. 41-4/17

Author : VERIGIN, N. N., Moscow

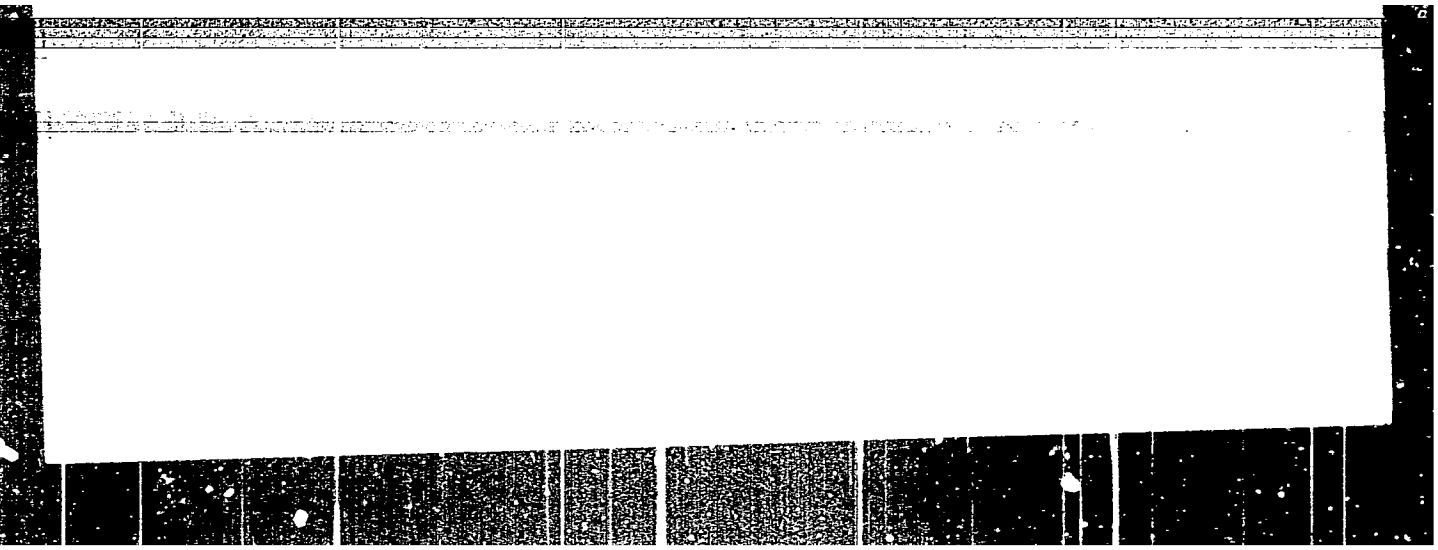
Title : Flow of subsurface water in the regions of dams, sluices, and canals.

Periodical : Izv. AN SSSR, Otd. Tekh. Nauk 6, 25-37, June 1955

Abstract : Discusses the theoretical means of determing the flow of subsurface water in relation to dams and other devices constructed to regulate or direct the flow of water. Distinction is made between the bank, surface and subsurface velocity of flow. Seepage of water through the banks, and under the dams, is discussed. Graphs, tables, diagrams and formulae. Twelve references, all USSR.

Institution :

Submitted : February 7, 1955



APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R001859510006-6"

VERIGIN, N.N.

Evaluating productivity of water intaking wells taking into account dynamic levels during the operation. Vod.i san.tekh. no.5:19-22 My '57. (MIRA 10:7)
(Artesian wells)

VERIGIN, N.N., doktor tekhnicheskikh nau, professor.

Calculating lowering of water level in trenches for buildings.
Gidr.stroi. 26 no.6:12-16 Je '57. (MIRA 10:7)
(Water, Underground)

Verigin, N.N.

VERIGIN, N.N., doktor tekhn.nauk, prof.

Drainage under dams. Gidr.stroi. 26 no.8:30-33 Ag '57. (MIRA 10:10)
(Drainage) (Dams)

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Dissolving and leaching of salts in ground filtration of water.
Nauch.dokl.vys.shkoly; stroi. no.2:211-219 '58.
(MIRA 12:1)

(Leaching) (Minerals in soil)

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98-58-3-12/22

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TITLE: On Dams in Rivers With a Highly Porous Alluvium (O peremychkakh na rekakh s sil'no pronitsayemym allyuviyem)

PERIODICAL: Gidrotekhnicheskoye Stroitel'stvo, 1958, Nr 3, pp 45 - 46 (USSR)

ABSTRACT: Certain Siberian river beds, such as those of the Angara and Yenisey, have highly penetrable gravel and pebble deposits with a filtration coefficient of 500 m per 24 hours. This affluence of water in the river bed foundation pits needs to be curbed. There are two types of dams designed to serve this purpose: 1) a crib-work dam with a sandy loam bank extended toward the upper water, which is preceded by a spillway facing made from the same material (2 to 3 m thick). To prevent this structure from being washed away it is backed by a crib or a stone prism, on the upper end of which a plank piling wall is erected. 2) an earth dam made from sandy loam which is supported by a stone prism with two layers of reverse filter; in front of the dam is the same spillway facing made of the same material as in the former type. The authors of this article have worked out a method and formula for determining the affluence of water to

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the foundation pit. This method is also applicable to the calculation of filtration through earth dams. Table 1 shows the influence of the width of river bed alluvium and the length of the spillway facing on the affluence of water in the foundation pit passing underneath the dam. It follows that the construction of a spillway is advisable only in the case of river beds with important alluvial deposits. Table 2 shows the influence of the width of alluvial deposits, and also the length of the plank pile wall, on the filtration passing underneath the dam. It shows also that the construction of a plank pile wall is practical only in the event of considerable accumulation of alluvial deposits. There is 1 figure and 2 tables.

Card 2/2 1. Dams-Applications 2. Dams-Design 3. Rivers-Erosion control

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24-58-3-33/38

AUTHOR: Verigin, N. N. (Moscow)

TITLE: The Movement of the Gas Contour in the Exploitation of Deposits of Natural Gas (O peremeshchenii kontura gazonosnosti pri ekspluatatsii mestorozhdeniy prirodnykh gazov)

PERIODICAL: Izvestiya Akademii Nauk SSSR, Otdeleniye Tekhnicheskikh Nauk, 1958, Nr 3, pp 169-171 (USSR)

ABSTRACT: In the exploitation of gas deposits, the question of movement of the gas-fluid boundary towards the gas hole is of interest from the point of view of gas conditions and the time of flooding of the hole. A theoretical investigation requires the solution of a Fourier differential equation with non-linear boundary conditions at the gas-fluid boundary. It may be assumed that $\mu_{gas} = 0$ , similar to a previous assumption by Leybenzon (Ref.1) for oil-water boundaries. The pressure forces are large compared with gravity or inertia effects, so that in the case of the motion of gas and fluid in the direction of a linear array of gas holes, the equation governing

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the movement of the boundary is:

$$a \frac{\partial^2 p(x,t)}{\partial x^2} = \frac{\partial p(x,t)}{\partial t} \qquad (\ell(t) < x < \infty,\ t > 0) \tag{1}$$

with conditions

a) initially : $p(x,0) = p_o = \text{const} \quad (\ell_o < x < \infty)$ (2)

b) at moving gas liquid boundary :

$$p(\ell,t) = p_c = \text{const} \qquad (p_c < p_o) \tag{3}$$

$$\frac{d\ell}{dt} = -\frac{k_o}{\mu n} \frac{\partial p(\ell,t)}{\partial x} \tag{4}$$

c) at outer boundary of liquid ($x = \infty$)

$$p(\infty,t) = p_o \tag{5}$$

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Symbols: a - coefficient of piezo conductivity $m^2/sec$; $p = p(x,t)$ - fluid pressure $kg/m^2$; $\ell = \ell(t)$ - distance

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from battery of gas holes to gas contour; $l_o = l(0)$ - initial distance for $t = 0$; $p_o$ - initial pressure of liquid in layer; $p_c$ - gas pressure in exploitation of layer; $k_o$ - permeability of gas content ($m^2$); $n$ - porosity; $\mu$ - absolute viscosity of fluid (kg s/$m^2$)

$$\left[\frac{\partial p(l,t)}{\partial x}\right]^2 = \frac{\partial p(l,t)}{\partial t} \qquad (4.a)$$

The gas pressure is reduced from $p_o$ to $p_c$ instantaneously at time $t = 0$, and a solution is obtained by a substitution, obtained by the analysis of previous measurements, of the form

$$p = p\left(\frac{x - l_o}{\sqrt{at}}\right) \qquad (6)$$

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Formulae are obtained for(a) Pressure in the fluid

$$p(x,t) = p_o - (p_o - p_c)\frac{1 - \Phi(\lambda)}{1 + \Phi(\beta)} \qquad (7)$$

where

$$\lambda = \frac{x - l_o}{2\sqrt{at}}, \quad \Phi(\lambda) = \frac{2}{\sqrt{\pi}}\int_0^{\lambda} e^{-\xi^2} d\xi \qquad (8)$$

For $x = l$ $\lambda = -\beta$.

(b) Distance of gas contour from battery of holes

$$l = l_o - 2\beta\sqrt{at} \qquad (9)$$

In Eqs.(7) to (9), $\beta$ is found from the transcendental equation:

$$\alpha = \frac{k_o}{na\mu}(p_o - p_c) = \sqrt{\pi}\beta e^{\beta^2}\left[1 + \Phi(\beta)\right] \qquad (10)$$

Card 4/6 (c) Volume of gas yield (per unit length of battery):